WINDOW WALLS

THEIR COST
and
THEIR ADVANTAGES

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DETROIT STEEL PRODUCTS COMPANY
DETROIT, MICHIGAN

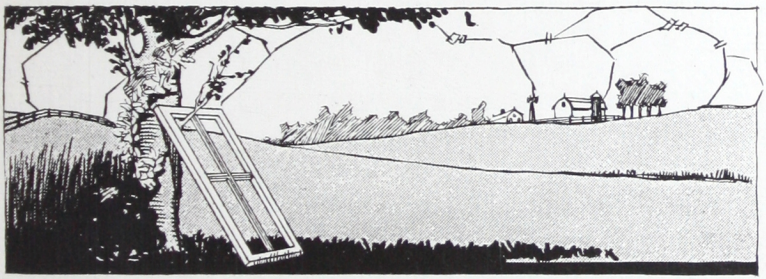
CHAPTER I

Why a Man Buys a Wall

Let's start with a subject that is interesting to both of us—Money.

Man works hard for money and when he spends it he always expects something in return. He expects somebody to benefit by the expenditure. In other words, money is always spent, or rather "invested," in the expectation of securing pleasure or comfort or more money or *something* for *somebody*.

Money invested in definite commodities usually brings quick returns. A typewriter, cigars, a railroad



The window is of no immediate use

ticket, an automobile, food, a steam shovel, are "quick investments" because they are definite articles ready to give returns as soon as purchased.

But money is frequently invested in partial and even intangible commodities in the expectation of "future" returns. Automobile parts give service only when assembled. Government bonds return interest only when held over a period of time. A farm is productive only when planted and cultivated. Building materials, brick,

stone, lumber, steel, are useful only when joined to form a residence, school or factory.

Now suppose a man is going to spend money for a window. The window is of no immediate use. Only when it is imbedded in a wall does it become serviceable in giving light, ventilation and protection. It is therefore a "future" investment just like brick or stone or any other building material. It gives a return on the money invested only when it has become an integral part of a completed building.

It seems inconsistent then to think of a window as an individual article, or to purchase it as a complete or segregated commodity. In reality, it is only so much *material* designed to become a part of a building wall. Like brick or lumber or concrete, its usefulness is only potential until the structure is done.

An Investment in Walls

A man invests in walls to secure the advantage which walls possess over natural conditions—Protection.

But walls that give protection alone are not satisfactory for they completely obstruct light and ventilation. Therefore, windows are cut in walls so that the building, while furnishing protection, may also provide daylight and fresh air.

These three requirements, then, are the basis of good wall construction:

1, Protection against fire and weather;
2, Natural lighting; and
3, Reasonable ventilation.

Even the most primitive walls provide these necessities in greater or less degree and most of the improvements in building construction have been designed to increase one or another of these requirements or to bring the three into more satisfactory relationship.

CHAPTER II

'Twas the Same Old Wall Problem Years Ago

When Jim Paintfeather operated his Iroquois moccasin factory amid our noble forests, he housed his office force and skilled labor (all combined in the person of his squaw) in an edifice known as a wigwam, the standardized building materials of that period being skins and poles.

Jim's factory had a little natural daylight (if the flaps were open) but no excessive ventilation and, as for protection, that depended on the thickness of the skins and the skill of the squaw who stretched them.

A few years later when the pioneer settlers, who survived the early massacres, set up in business as makers of oxen yokes and wagon wheels, they chopped down the forest trees and laid up factories of logs. These cost more than skin wigwams—cost more in labor and in building time—but they afforded better protection from the elements and with a rude window here and there, materially improved the daylight and the ventilation. Log houses became standard construction.

Then saw mills and glass and carpentry developed.

Standard building material being skins and poles

Logs, with their rude joinings and rough hewn edges, gave place to smooth timbers and clapboards that fitted accurately. Windows that had been rough frames covered with oiled paper gave place to sash containing glass. Light, ventilation and weather protection grew better and again the cost advanced, because the type of building material had been improved and the wall service rendered was greater.

Then came brick and stone and concrete and steel with sliding wooden sash, thicker walls, better protection from weather, better lighting, ventilation and fire protection. Once more the cost increased, but brick and stone were accepted as desirable building materials largely because of their improved appearance and superior protective qualities.

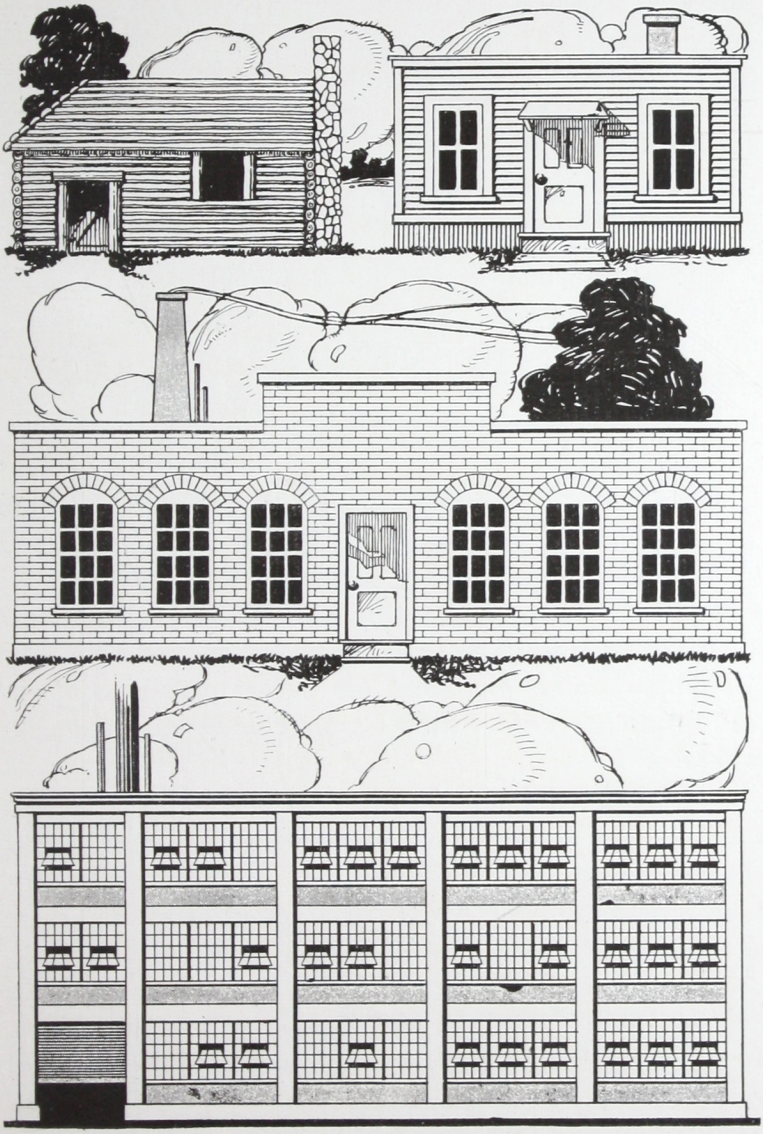
Then came a real awakening. Builders began to realize that residence types of buildings did not make ideal industrial plants.

When people in houses needed more light they picked up their work and moved closer to the windows. But people in industrial plants could not move machines nor desks to the light. It became apparent that light had to be taken to them.

This was the inception of the "window wall" idea.

The wide expanses of unlighted wall gradually gave place to double windows, then to many windows separated only by frames and weight boxes. And then in 1907 came Fenestra, the first steel window-wall manufactured in America.

With narrow steel bars and wide area of glass, Fenestra was exactly what its name implied, a "window-wall." It was welcomed by the building profession because it



Four steps in window wall development

provided 25 to 50 percent more light than wooden windows in walls of brick or stone; because it offered better fire protection than wood and because, being non-warping and non-sticking, it afforded better control of ventilation.

The Movement Toward Better Building

But even when Fenestra became established on a practical commercial basis, it is doubtful whether its use would have been so readily recognized had not the whole tendency of modern construction been directed toward the very advantages which this material supplied.

"Permanent Fireproof Building," "Better Working Conditions," "Increased Output," "Reduced Labor Turn-over," "Protection for Employees" were the slogans of industrial construction. Efficiency experts talked better light and ventilation. Insurance companies campaigned against the heavy losses due to faulty building. Labor clamored for better places to work. Sanitation and Safety First Campaigns sprang up everywhere.

And these campaigns have continued and increased until today progressive industries actually advertise their "Fenestrated Buildings" as an inducement for high grade labor. Architects, artists and designers sketch "Fenestrated" walls instinctively as the background for industrial settings. Extra credit is given for "Fenestrated" buildings when fixing fire insurance rates. In short, steel sash—Fenestra—has come, in the national consciousness, to stand as the symbol of modern, high grade industrial construction and the factory, whose walls are largely glass and steel, is marked in the public

By advertising broad areas of daylight the Holeproof Hosiery Company secures high-grade employes

mind as a progressive, successful and humanitarian institution.

Yet, even with its present popularity, Fenestra is considered largely as *a window.*

The idea of buying a "window wall" of glass and steel and erecting 40 or 50 square feet in a single chunk is still too novel to be fully appreciated. People can't understand that Fenestra *not only takes the place of windows but of superfluous brick and stone as well.*

People ask us:

"Your windows are much higher in price than wooden windows, aren't they?"—and they never mention nor

consider the fact that the glass area of Fenestra is usually many times that of ordinary wooden windows; that the surrounding brick work is amazingly reduced; that, in fact, Fenestra is *not a window at all but a wall that can be sold and erected in sections.*

It would not be unusual either if Fenestra window walls were higher priced than old-fashioned wood windows for that has been the history of each new type of building construction since the time of the Indian wigwam. Such increases in price are the natural results of vastly *greater increases* in service rendered.

But Fenestra does *not* necessarily increase the cost of construction. Frequently it *reduces* the cost. But *always*, as we will prove in the next chapter, *it gives better returns on the investment than any other wall material made.*

CHAPTER III

Wall Cost Measured by Square Feet of Light

You buy a wall to secure the service it gives: protection, light and ventilation. However cheap a wall may be in actual dollars and cents, if it fails to provide the three advantages it is an expensive wall, because it does not render the service you pay for.

Walls with wooden windows, which restrict the light and ventilation and consequently reduce production, may possibly be bought for less real money than walls of glass and steel, but they are *always* more expensive if figured on the cost of service rendered.

That is why *Fenestra window walls give better returns on the investment than any other wall material made.*

Here is a case in point:

The Most Economic Wall Service

A small gasoline filling station had been laid out to wood sash. The designer figured it would require:

1 sash 2′4″ x 6′6″
1 sash 6′ x 6′6″
2 sash 4′ x 6′6″
4 sash 2′4″ x 4′4″

These windows equipped with single strength glass could be purchased, the builder said, for $71 from a local wood sash concern. They provided all told, 94 square feet of light, and half that much ventilation.

In other words, the light cost .76 per square foot.

The Fenestra window wall design for that same building, including double strength glass, necessary for steel sash, cost $135—nearly double the wood sash price.

BUT—

The Fenestra layout furnished 185 square feet of light with ventilation equal to that obtained in wood sash.

In other words, the price was .74 per square foot of light.

In dollars and cents the Fenestra window wall costs $64.00 more than the wall with wooden windows.

Measured from the standpoint of service, the buyer secures nearly twice as much light in the Fenestra layout, and pays .74 per square foot, as compared to .76 per square foot in the wood sash installation. He also secures better fire protection, an equal amount of ventilation and a considerable decrease in other wall material, made possible by the wide expanse of window walls.

But Fenestra window walls do not always cost more, even when figured in straight dollars and cents. Here are some examples on the other side of the ledger.

42% More Daylight for $75 Less

The other day a man in Kansas asked us for a price on 14 Fenestra windows like Fig. 2. He secured elsewhere a price on double strength, "A" quality glass, putty, and glazing labor.

He then went to a local wood sash concern and secured a figure for 14 wooden windows like Fig. 1 glazed with single strength glass and fully equipped with pullies, weights, cord, etc.

In actual cash, Fenestra was $75 cheaper than wood, but the big point is this:

The cost of the wooden windows figured out *$1.78 per square foot of light.*

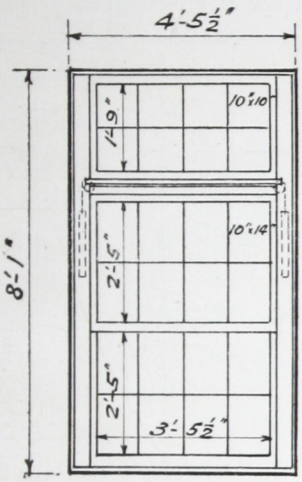


Fig. 1

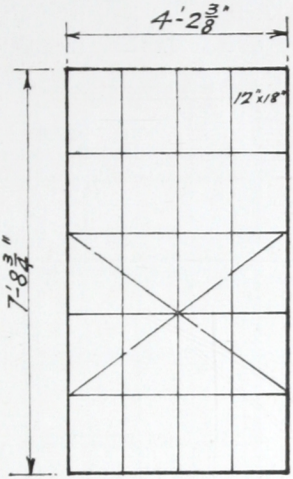


Fig. 2

The Fenestra windows provided 42% more daylight and practically the same ventilation at a cost of *$1.01 per square foot of light* and this without figuring in the cost of the brick wall which would have made the difference still greater.

84c or 25c per Square Foot of Light

Two local wood sash concerns in a certain midwestern city quoted $3,030 for 100 wooden sash with frames without glass like the one illustrated in Fig. 3. Each sash was divided into 24 lights of 12″ x 18″ glass, and the eight panes in the center were ventilated, the ventilator being pivoted in the center.

These sash provided 3,600 square feet of light and 1,200 square feet of ventilation.

The cost per square foot of light was .84.

Based on a quotation for 100 similar sized Fenestra windows each unit containing 24 panes of 14″ x 20″

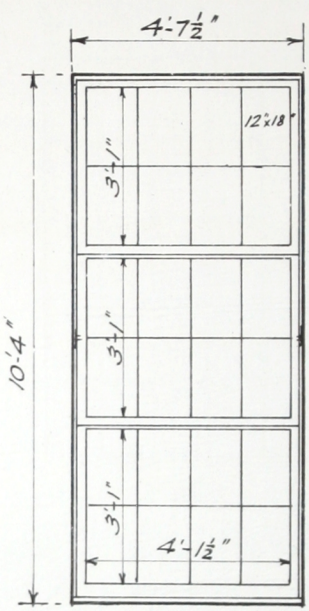


Fig. 3

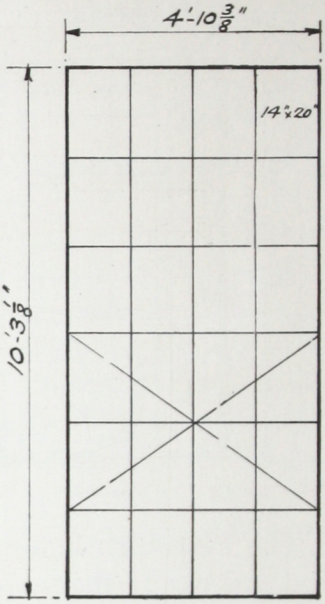


Fig. 4

glass providing 4,800 square feet of light and 1,600 square feet of ventilation, *the price was $1,186, or .25 per square foot of light.*

Compare the Wall Service Here

But, as we have said before, the true value of a Fenestra window wall becomes apparent only when the cost is compared to wooden windows *together with* the cost of the surrounding brick work. Since Fenestra eliminates much of this brick work it is only fair to give it credit for the reduction in price such elimination represents.

Compare for instance the cost of the service rendered by these two walls.

Here is a 13″ brick wall, 20′ wide by 15′ high. It contains one wooden window approximately 4′ wide by 7′ high surmounted by a wood filler and a rowlock arch, Fig. 5.

This sash provides 18 square feet of light and 9 square feet of ventilation.

The cost of this window, erected, glazed, painted, and provided with a stone sill is $18.39. This includes, sash, frame, weights, cord, etc.

The approximate cost of the brick work surrounding this window is $246.00.

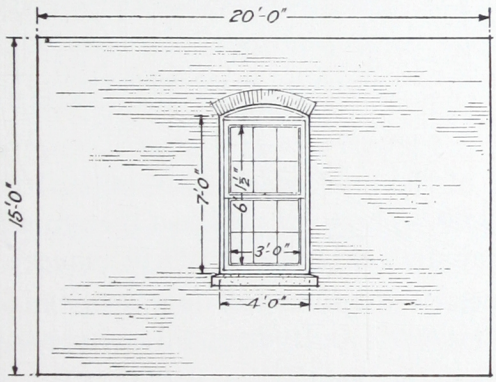


Fig. 5

The total wall cost therefore is $264.39 for 18 square feet of light. In other words, the light admitted through this wall costs $14.68 per square foot.

Here is the same area filled with Fenestra window walls, Fig. 6. The window opening measures 16′ 1½″ wide by 8′ 6¾″ high and contains three units of sash accommodating 14″ x 20″ glass. It provides 130

square feet of light and 32 square feet of ventilation. The approximate cost of the "window wall" is $151.00 installed complete with steel I-beam, lintel, sill and ventilator hardware.

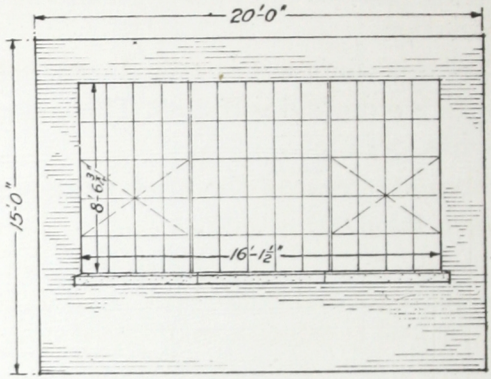


Fig. 6

The cost of the brick work surrounding the window wall is $138.00. The total wall cost therefore is $289.00 for 130 square feet of light or $2.21 per square foot.

The Fenestra window wall increases the amount of light by about 600% and reduces the cost per square foot.

It increases the ventilation 250%.

It provides the fire protection of solid steel bars as opposed to wooden windows and offers a modern efficient type of construction that everybody recognizes as the symbol of progressive, aggressive, up-to-date industry.

CHAPTER IV

Details of Wall Cost

The chief duty of a wall is to furnish light, ventilation and protection.

Fenestra, being a wall material, should supply these services at a reasonable price.

It does.

> *A Fenestra window wall—that is, a wall composed largely of glass and steel—will furnish more light at less cost per square foot than any other wall material known, and it will provide equal ventilation and better protection.*

To illustrate:

Let's suppose that a Fenestra window actually costs 25% more than a wood window.

"Twenty-five percent," says the hasty buyer, "why that's one-quarter of the whole sash price. I'd be willing to pay a little preference for Fenestra over wood, but 25% more! No, there's absolutely nothing doing!"

Perhaps that ought to end the discussion, but we are mighty persistent animals over here. We'd like to argue this point a little.

We'll say you are residing in Birmingham, Alabama, (that will put you far enough from Detroit so that you are safe from "undue influence"). You are going to build a public garage. Being in need of light, ventilation and protection in that building, and being also of an analytical temperament, you roll up your sleeves and dive into costs pretty thoroughly.

You get, first, a few figures on brick:

Common Brick	$18.00 per M
Mortar	4.50 per M

A mason, laying common brick on buildings of this type, can lay about 180 bricks an hour (especially when the foreman is around). Half as much again "labor time assisting masons" (plain old hod carrying) as "mason time" will be required. The mason gets about 80c to $1.00 per hour and his helper about half that. The cost of laying the brick, therefore, figures out about like this:

Mason 5½ hrs.	@ $1.00	$ 5.50
Helpers 8 hrs.	@ .50	4.00
Total labor		9.50 per M
		$32.00
Plus 20%, for contractor's overhead, profit, etc.		6.40
		$38.40 per M
		or say .039 per brick erected*

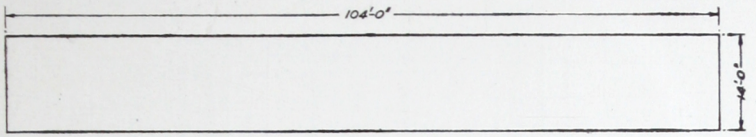
*All figures used in this and in following estimates are necessarily approximate and may vary in any particular locality. At the time this is written common brick sell for $14.00 per M in Chicago and $21.00 per M in Oklahoma. Labor estimates based on "The Building Estimators' Reference Book," Frank R. Walker Co., Chicago.

Your mason contractor will tell you that there are, on an average, 13 bricks in one square foot of 8″ to 9″ brick wall (allowing ⅜″ of mortar) and with the same allowance for mortar, 21 bricks in one square foot of 12″ to 13″ brick wall. (Some contractors figure 18 brick per square foot of 13″ wall but allow wider mortar joints and 5% extra brick for breakage.)

8″ walls cost, therefore, 13 x .039 or .507 (say .51) per sq. ft.
13″ walls cost, therefore, 21 x .039 or .819 (say .82) per sq. ft.

(Plenty of contractors figure as high as .60 per square foot of 8″ wall or .90 per square foot of 13″ wall, but we prefer to use minimum figures.)

Now, suppose you take a typical wall—let's say it's 104′ long by 14′ high and 13″ thick. This wall, 104′



SOLID BRICK

Fig. 7

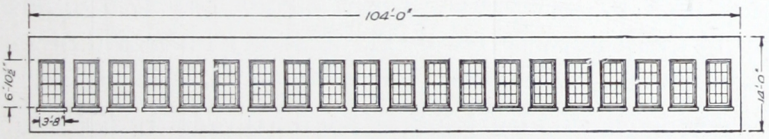
long by 14′ high, contains 1,456 sq. ft. which, multiplied by .82 per sq. ft. (the cost of walls 13″ thick) gives a total cost for the wall of $1,193.92.

And the wall will look like this (See Fig. 7.)

It gives a lot of protection, but no light and no ventilation.

"Not much of a wall for a garage," you say—so you get a figure on 20 wooden window sash with frames and fittings, and an estimate on the labor cost of installing, glazing and painting them. (Fig. 8.)

Now, you are cutting holes in your perfectly good wall (which already gave protection) in order to secure the two other wall essentials—light and ventilation.



BRICK WITH 20 WOODEN WINDOWS

Fig. 8

You find that your wood sash will be made up, two sash to a frame, each sash containing 6 lights of 12″ x 18″ glass. (See Fig. 9.) The frames will measure 4′ 0″ wide by 6′ 10½″ high.

In other words, you are now going to cut 20 holes in your wall to admit light and ventilation. Each hole

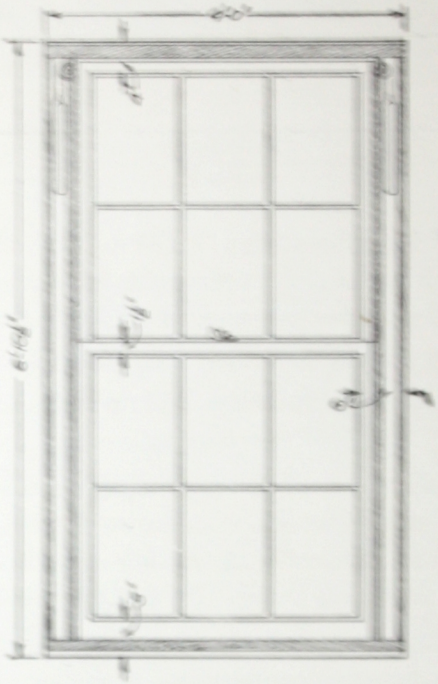


Fig. 9

will be 4' 0" by 6' 10½" which means that 27.5 square ft. of brick must be removed. Twenty holes will mean the removal of 20 times 27.5 or 550 sq. ft. of brick.

But each wooden window contains only 12 lights of 12" x 18" glass. That figures out 18 sq. ft. of light per window or 360 sq. ft. of light for 20 windows, so what you are really doing is taking out 550 sq. ft. of brick in order to get 360 sq. ft. of light and, since the ventilation is about 50% of the opening, you will get about 180 sq. ft. of ventilation. (See Fig. 9.)

Your cost figures will probably look about like those on pages 22 and 23.

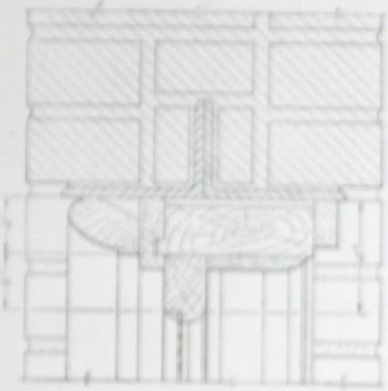


Fig. 10

Wood window—Head detail

Fig. 11

Wood window—Jamb detail

Fig. 12

Wood window—Sill detail

Sash Cost

All figures given for wood sash have a tendency to be too low rather than too high. This is intentional as, for the sake of illustration, we want the discrepancy between wood and steel prices to be as large as possible.

1 Yellow Pine Frame	$ 5.75	
2 Y. P. Sash (12″ x 18″ glass)	4.25	
4 Weights (7¼ lb. each or 29 lb.) @ .02½ per lb.	.73	
4 Pulleys @ .08½ each	.34	
2 Lifts and 1 Lock @ .04 each	.12	
16′ Sash Cord @ .02 per ft	.32	
(No casings figured)		
Cost per opening	$11.51	
Cost for 20 openings		$230.20

This includes profit to the manufacturer.

550 sq. ft. of Sash at $230.20 gives a sash cost of .418 per sq. ft.

Setting and Hanging Cost

It takes a carpenter three-quarters of an hour to set, plumb and brace a single wood window frame, with an allowance of one-fifth of an hour for common labor for carrying and setting frame. It will take the carpenter an hour more to hang the sash and attach weights, fittings, etc. The carpenter gets .80 per hour and the laborer .45 per hour.

Carpenter 1¾ hrs. @ .80	$1.40	
Laborer 1-5 hr. @ .45	.09	
Cost per opening	$1.49	
Plus 20% for incidentals and contractor's profit	$1.78	
Cost per 20 openings		$35.60

550 sq. ft. of Sash at $35.76 gives an erection cost of .065 per sq. ft.

Glazing Cost

Ordinary single strength "A" glass 12″ x 18″, when bought in quantity, runs about $6.00 per box of 50 sq. ft., .12 per sq. ft. or .18 per light. Glazing labor costs about 7½c per light and putty about 4c per pound, ½ lb. per 12″ x 18″ light or .02 per 12″ x 18″ light.

Glass 12 lights @ .18	$2.16	
Glazing 12 lights @ .07½	.90	
Putty 12 lights @ .02	.24	
Cost per opening	$3.30	
Plus 20% for incidentals and contractor's profit	$3.96	
Cost per 20 openings		$79.20

360 sq. ft. of Glass at $79.20 gives a glass and glazing cost of .22 per sq. ft.

Painting Cost

In painting windows divided into a number of small lights, the time per sq. ft. for two-coat work is estimated at 1½ minutes. Each window contains 27.5 sq. ft. on each side or 55 sq. ft. It would take a painter 1 hr. 22 min., or 1.37 hrs., therefore, to paint each window two coats. The painter gets .75 an hour.

Paint runs, let's say, about .003 per sq. ft.

Painter, 1.37 hrs. @ .75	$1.02	
Paint, 55 sq. ft. @ .003	.16	
Cost per opening	$1.18	
Plus 20% for incidentals and contractor's profit	$1.41	
Cost for 20 openings		$28.20

550 sq. ft. of Sash at $28.20 gives a painting cost of .052 per sq. ft.

Lintel Cost

Since there is a considerable weight of wall above the windows, it would not be good construction to let the brick rest directly on the window frames. Therefore, two angles 5″ x 3½″ x $\frac{5}{16}$″ should be used. See Fig. 10. Each angle weighs 8.7 to the foot. Allowing a 3″ bearing surface on either side of the opening, each window would need two angles 4½′ long at a cost of about .0343 per lb. (.60 per ft. per pair).

NOTE—Frequently the lintel cost is omitted by the use of rowlock arches.

4½ x .60	$ 2.70	
Cost per opening	2.70	
Cost per 20 openings		$54.00

This includes manufacturer's profit.

Sill Cost

Poured concrete sills where sill is made in a box on the ground and lifted into the opening run about .50 per lineal ft., allowing 4″ either side of opening, sills will be 4′ 8″ long or 4⅔′ x .50, or $2.33.

Cost per opening	$ 2.33	
Cost per 20 openings		$46.60

This includes manufacturer's profit.

Now, if you will total up these figures you will find that they come to $473.80 and as you are going to get 360 sq. ft. of light, the actual windows in your wall, installed, glazed and painted, will cost you $1.31 per sq. ft. of light.

But you haven't considered the rest of your wall—the brick work surrounding the windows:

NOTE—Where only single window openings occur in a wall, contractor usually figures at least ½ and frequently the entire area of the window in the cost of the wall without making any allowance for brick omitted. However, we prefer to be conservative and make no charge for brick omitted.

Since 550 sq. ft. of brick were removed from the total area of 1,456 sq. ft., 906 sq. ft. of brick will remain, which will cost you .82 per sq. ft. or $742.92.

Therefore, the total cost of your wall with wooden windows will be:

Sash	$473.80
Brick	742.92
Total	$1,216.72

or, $3.38 per square foot of light.

Incidentally, you will observe, perhaps to your surprise, that the cost of the wooden windows alone, which came to $230.20, is only 18% of the $1,217.00 which you are to pay for the whole wall.

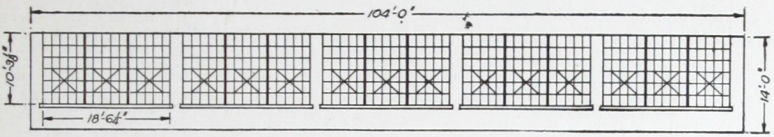
Now Let's Get the Fenestra Figure

Now, suppose you call in the nearest Fenestra representative, and ask him for a price on Fenestra window walls.

"Two hundred and eighty-eight dollars ($288.00) is the price for Fenestra including freight to Birmingham," says our representative (twenty-five percent higher than wood sash).

At once your fears are confirmed. Steel sash *are* higher than wood sash—very much higher—so high, in fact, that you guess you'll stick to the original figure.

However, you decide to get a detailed estimate anyway.



BRICK WITH FENESTRA SASH

Fig. 13

You find, when you get into the question of steel sash, that several considerations come up that you hadn't thought of before. You find, for instance, that much depends on the window layout; that standard sizes and dimensions are much more economical, and that the number of windows of a kind plays an important part.

The Fenestra man draws you up a little layout in standard sizes. It looks like figure 13. He tells you he is laying it out to 14″ x 20″ glass instead of 12″ x 18″ because the larger the glass size, the cheaper the sash.

You find that instead of 20 single windows, you have five big bays, all steel and glass, each bay being 18′ 6¼″ wide by 10′ 3⅛″ high. Each bay contains three units of sash, each sash five lights wide, six lights high, with one six-light ventilator.

A little figuring shows you that 950 sq. ft. of brick will be removed, and that your wall will contain 450 lights of 14″ x 20″ glass (at about 2 sq. ft. each) or 900 sq. ft. of lighting area, and 180 sq. ft. of ventilating area.

More light.

Equal ventilation.

Steel windows, in brick, certainly furnish better fire protection than wood windows in brick.

So your wall seems to give equal or greater efficiency in all three of the prime essentials which make walls valuable.

Now how about the cost? Figures are shown on the following page.

Sash Cost

The following estimate gives some idea as to prices. All figures given for steel sash have a tendency to be too high, rather than too low. This is intentional, as we want the discrepancy between wood and steel sash prices to be as large as possible.

Twenty-five percent increase over wood as per our arbitrary assumption at the beginning of this chapter..... $288.00

This includes manufacturer's profit.

Erection Cost

You can figure the cost of erection on steel sash, on jobs where the erectors can stand on the ground or on the floor, as about ¼ more than the cost of erecting wood sash per sq. ft.

Wood sash ran .065 per sq. ft. Suppose steel sash runs .08.

950 sq. ft. @ .08..... $ 76.00

This includes contractor's profit.

Glass and Glazing Cost

Steel sash requires something better than single strength, say D. S. A. or ⅛" factory ribbed; also more putty is required and we have to include freight on glass and putty to Birmingham. Suppose the price is 10% more per sq. ft.

Wood sash ran .22 per sq. ft. Suppose steel sash runs .24.

Steel sash, 950 sq. ft. @ .24..... $228.00

This includes contractor's profit.

Painting Cost

Steel sash is already painted one coat before it leaves the factory. Suppose we estimate the cost of the field coat at a little more than half the cost of two coats on wood sash—say .03 per square ft.

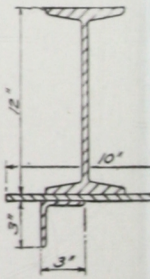
950 sq. ft. @ .03..... $ 28.50

This includes contractor's profit.

Lintel Cost

Five 12" I-beams with 10" plate for supporting brick work and 3" x 3" angle for attaching sash. (See Fig. 14) @ $48.00 each..... $240.00

This includes manufacturer's profit.



Sill Cost

95 feet of poured concrete sill @ .50 per foot..... $ 47.50

This includes manufacturer's profit.

The total cost of Fenestra windows, therefore, is $908.00, and this looks pretty high compared to $474.00 for wood.

The Fenestra windows, however, give 900 sq. ft. of light, which figures out at $1.01 per sq. ft. as compared to $1.31 per sq. ft. where wood windows were used.

On sash alone, therefore, Fenestra steel windows are cheaper than wooden windows when figured in terms of their efficiency, namely, light, ventilation and protection.

But we haven't considered the brick work.

Since 950 sq. ft. of brick were removed from a total area of 1,456 sq. ft., 506 sq. ft. will remain which, at .82 per sq. ft., will cost $414.92.

(The labor cost on laying these piers would be higher than the cost figured for solid walls but this would hardly make an appreciable difference in the total cost.)

Therefore, the total cost of your wall with steel windows will be:

Sash	$908.00
Brick	414.92
Total	$1,322.92

or $1.47 per sq. ft. of light

Now, let's summarize it:

Item	Wall with wood sash Amt.	Sq. ft.	Wall with steel sash Amt.	Sq. ft.
Sash	230.20	.418	288.00	.303
Erection	35.76	.065	76.00	.08
Glass and Glazing	79.20	.22	228.00	.24
Painting	28.32	.052	28.50	.03
Lintels	54.00	.....	240.00	.....
Sills	46.60	.....	47.50	.....
	473.80		908.00	
Brick Wall	742.92		414.92	
Total	1,216.72		1,322.92	

It is evident on the basis of these figures, that while steel sash—*as sash*—cost about $434 more than wood sash, their use entails a saving of $328 in brick cost as compared to the use of wood.

The total increase therefore in the cost of the steel sash wall as compared to the wood sash wall is just exactly $106.20.

Now then:

Does or does not steel sash provide sufficiently better service than wood to warrant an additional expenditure of $106.20?

That's the whole question.

Here is the Real Basis of Comparison

	Wall with wood sash	Wall with steel sash	Difference
Cost	$1,216.72	$1,322.92	Steel costs $106.20 more
Amt. of light	360 sq. ft.	900 sq. ft.	Steel gives 540 sq. ft. more.
Cost per sq. ft.	3.38	1.47	Steel costs $1.91 less.
Amt. ventilation	180 sq. ft.	180 sq. ft.	Equal
Weather Protection	Excellent	Excellent	Equal
Fire Protection	Small	Excellent	Steel is better.
Percent of light to wall area	25%	61%	Steel gives 36% more.

The wall of brick and steel sash gives 150 percent more light than the wall of brick and wood sash. It gives the same ventilation. It provides fire protection of steel bars as compared to wood frames. It offers equal protection against weather.

You are not buying sash, nor walls, nor buildings, but the *services that these render to you and your*

business. Why not get the most service you can for the money?

Are you willing to pay $3.38 per sq. ft. for the light in your wall when you can get much more of the same commodity for $1.47 per sq. ft. and have equal ventilation and superior protection thrown in?

Or,

Are you willing to pay $1,217.00 for the light in your wall when you can get 2½ times as much light for $106.00 more?

CHAPTER VI

The Moral

The moral to our little fable is just this:

1. A Fenestra window is a wall "for all that."
2. Light, ventilation and protection are the measure of a wall's utility.
3. Buy the construction that makes your wall service cost less and produce more.

Evans Winter-Hebb
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